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**VIA ELECTRONIC FILING**

May 2, 2019

Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 201154

Re: ***Ex Parte* Notification**

**ET Docket No. 18-295**, *Unlicensed Use of the 6 GHz Band*; and

**GN Docket No. 17-183**, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*

Dear Ms. Dortch:

On April 30, 2019, Russell Fox of Mintz and I met with Aaron Goldberger, Acting Wireless and International Advisor to Chairman Pai, and provided him with the attached presentation.

We separately met with the following members of the Office of Engineering and Technology, in each case regarding the above-referenced proceedings.

| | |
|---|---|
| Julius Knapp | Karen Rackley |
| Aspasia Paroutsas | Nicolas Oros |
| Ira Keltz | Barbara Pavon |
| Paul Murray | Hugh Van Tuyl |
| Jamison Prime | Bahman Badipour |

We reiterated the importance of this proceeding to meet the immediate needs of the American public for additional capacity for Wi-Fi systems and that the 5925-7125 MHz ("6 GHz") band is uniquely suited to help meet those demands. We noted that Wi-Fi Alliance plans to introduce its Wi-Fi 6 certification program[1/] to support the next generation of Wi-Fi connectivity – technology that will perform optimally in the wider bandwidths available in the 6 GHz band. We observed that nothing in the record in this proceeding challenges these fundamental assumptions.

While some parties have urged the Commission to require the use of Automatic Frequency Coordination ("AFC") for all unlicensed devices, across the entire 6 GHz band, we urged the Commission to reject this approach. While AFC will offer robust protection for standard power

1/ *See* Wi-Fi Alliance, *Wi-Fi Certified 6 Coming in 2019*, Press Release, Jan. 8, 2019 available at https://www.wi-fi.org/news-events/newsroom/wi-fi-certified-6-coming-in-2019.

operations, it will be unnecessary to burden low power indoor-only ("LPI") devices with this additional complexity. Wi-Fi Alliance's comments in this proceeding have explained why LPI operations will not create harmful interference to incumbent users.[2/] LPI transmissions will be attenuated by building entry loss, clutter loss, and polarization mismatch loss. And interference from LPI operations will be further mitigated by multipath fading, the low Wi-Fi transmission duty cycle, the limited frequency overlap between Wi-Fi and incumbent operations the 6 GHz band, and the limited probability of Wi-Fi deployment within an incumbent communications link. The scenarios suggested by others[3/] under which harmful interference may occur are simply extreme-corner cases. There are no valid bases on which to preclude or further constrain LPI operations in any portion of the 6 GHz band. Moreover, development and certification of AFCs will likely be a multi-year process, delaying Wi-Fi access to urgently needed spectrum capacity, channel availability, and bandwidth.

We asserted that for non-LPI installations, AFCs will fully protect incumbent operations. The rules governing AFCs should promote flexibility and technology neutrality enabling functional protection of incumbent operations by managing unlicensed frequency access. The certification of AFCs should be a Commission function. There is no need for third party or multi-stakeholder management of AFC processes.

* * * *

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed in the above-referenced docket. Please direct any questions regarding this filing to me.

Respectfully submitted,

*/s/ Alex Roytblat*

**WI-FI ALLIANCE**
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Attachment
cc: (each by e-mail)
Aaron Goldberger
Julius Knapp
Aspasia Paroutsas
Ira Keltz
Paul Murray
Jamison Prime
Karen Rackley
Nicolas Oros
Barbara Pavon
Hugh Van Tuyl
Bahman Badipour

2/ *Comments of Wi-Fi Alliance*, ET Docket No. 18-295 at 11-15 (Feb. 15, 2019).

3/ *See e.g. Comments of Fixed Wireless Communications Coalition*, ET Docket No. 18-295 at 18-22 (Feb. 15, 2019).

# Unlicensed Use of the 6 GHz Band

Alex Roytblat
Wi-Fi Alliance
April 2019

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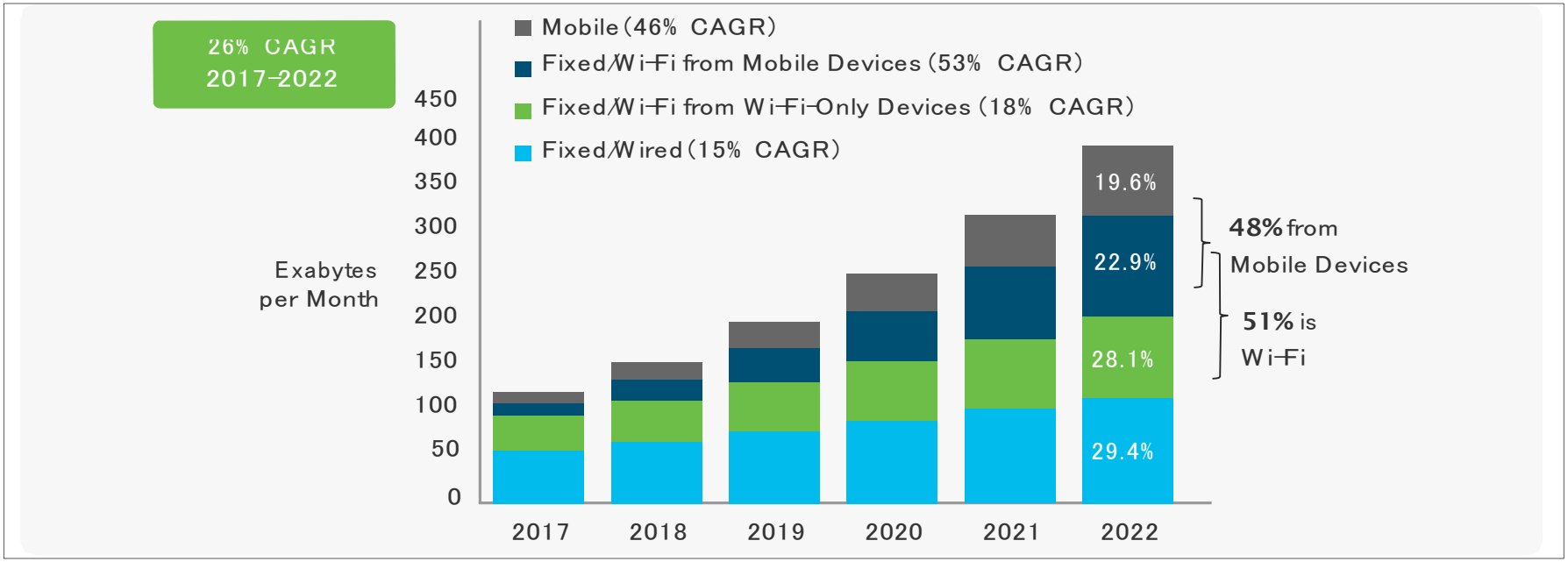
# Wi-Fi – Integral Component of Telecommunications Infrastructure

Proprietary | © Wi-Fi Alliance

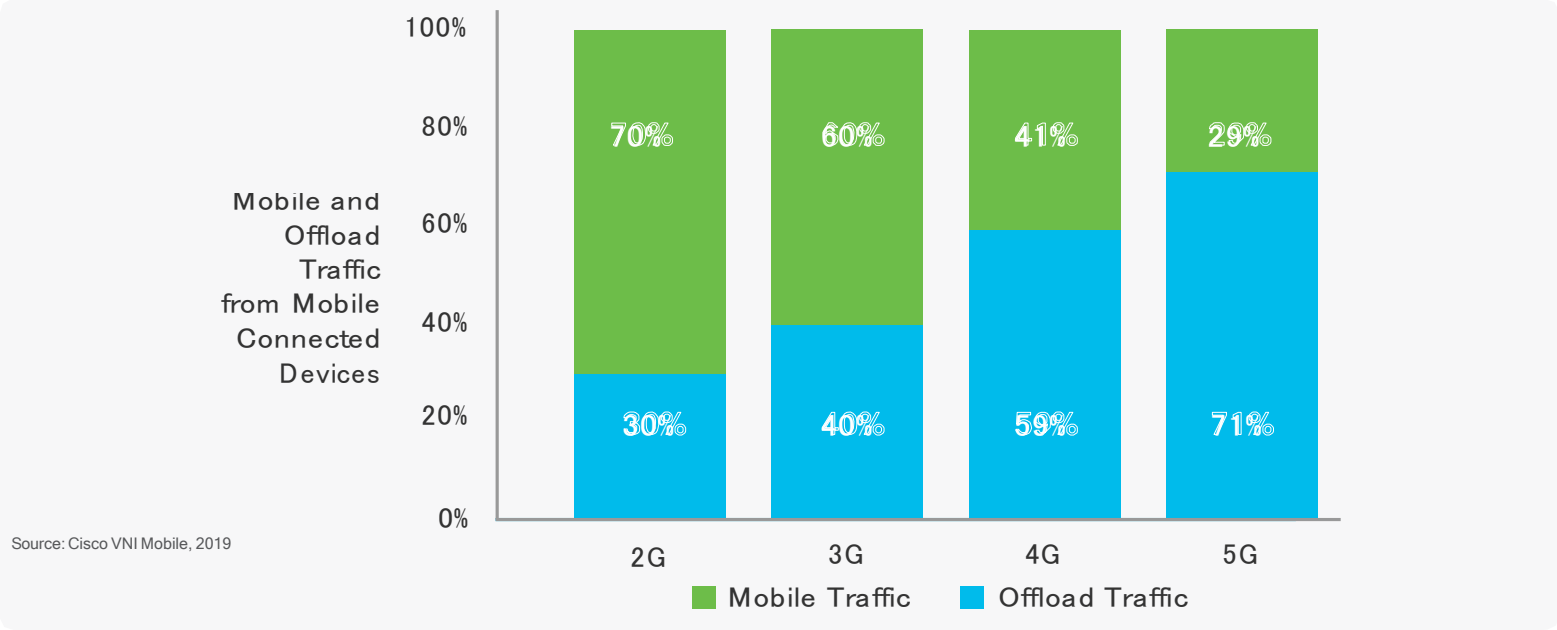
# Wi-Fi – Integral Component of Telecommunications Infrastructure

- Wi-Fi supported applications: *video streaming, Wi-Fi calling, monitoring, hotspot access, automation, smart cities, rural broadband, AR/VR, IoT, roaming and many others*
- Wi-Fi delivers ***more than half*** of all internet traffic



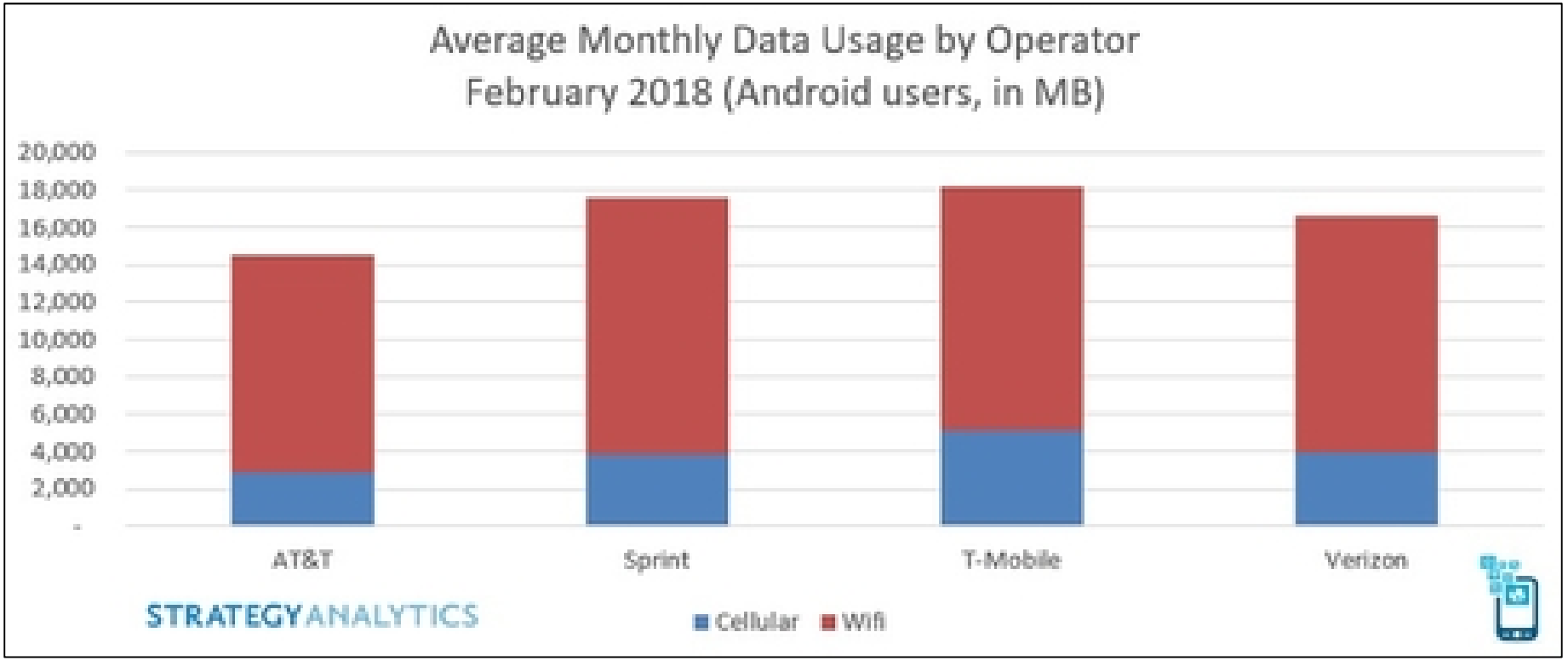
# Wi-Fi – Integral Component of Telecommunications Infrastructure

- From 2G to 3G to 4G to 5G: Wi-Fi offload continues to grow
- More than previous generations, 5G rollout depends on Wi-Fi availability




*Mobile Data Traffic and Offload Traffic, 2022*

# Wi-Fi – Integral Component of Telecommunications Infrastructure

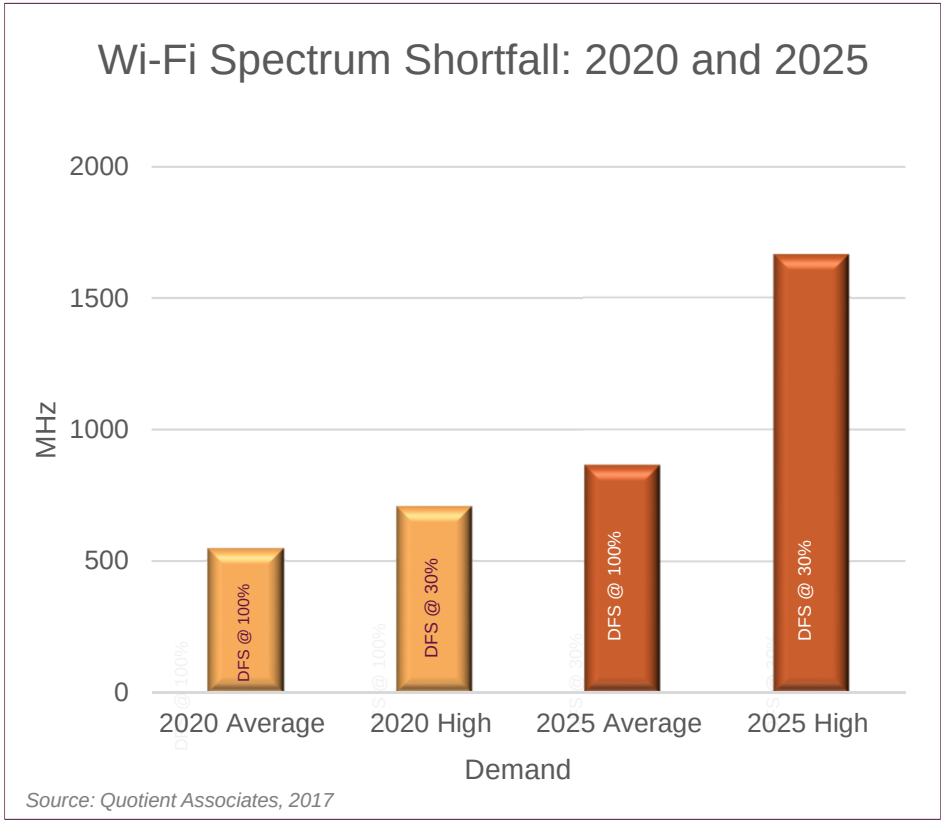


# Growing Demand/Growing Spectrum Need

Proprietary | © Wi-Fi Alliance

# Growing Demand/Growing Spectrum Need

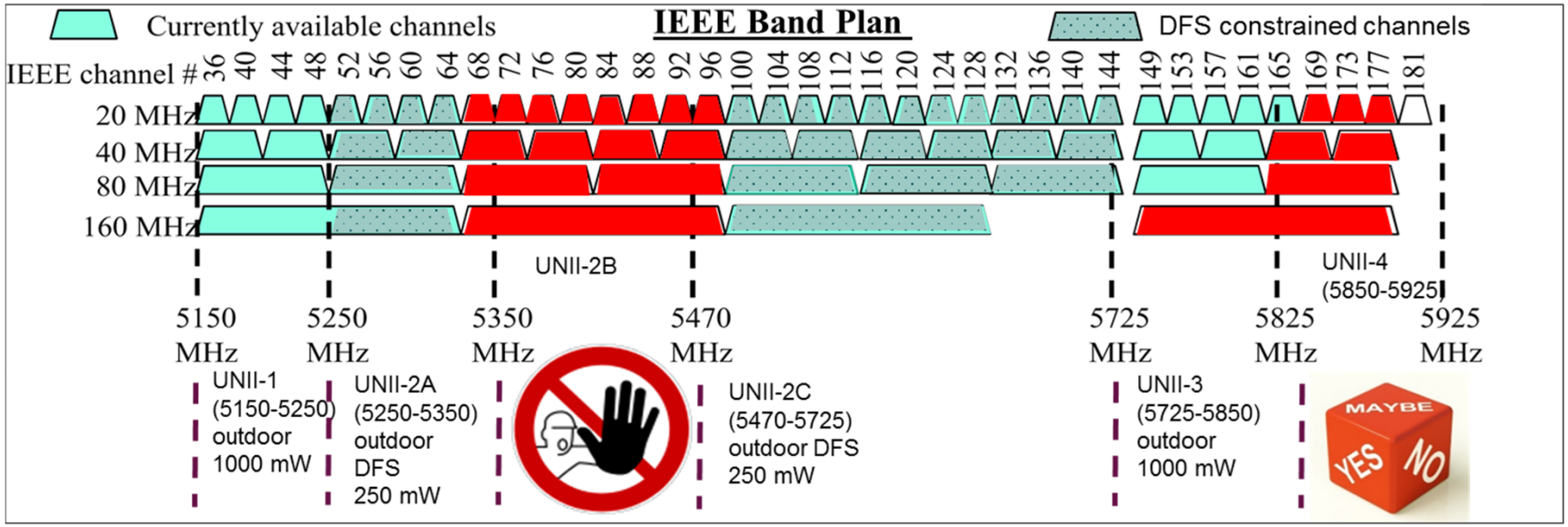
- While Wi-Fi has evolved from a nascent technology to an integral component of telecom infrastructure, it still operates in a limited amount of spectrum that was made available almost two decades ago
- Next generation Wi-Fi (Wi-Fi 6) is designed to support higher data rates and low latency applications
  - Fiber to the home and 5G fixed wireless access will deliver 1Gbps but what about the “last 50 feet”?
- Studies confirm***: currently available spectrum is insufficient to meet growing demand for Wi-Fi***
  - Wi-Fi Alliance Study



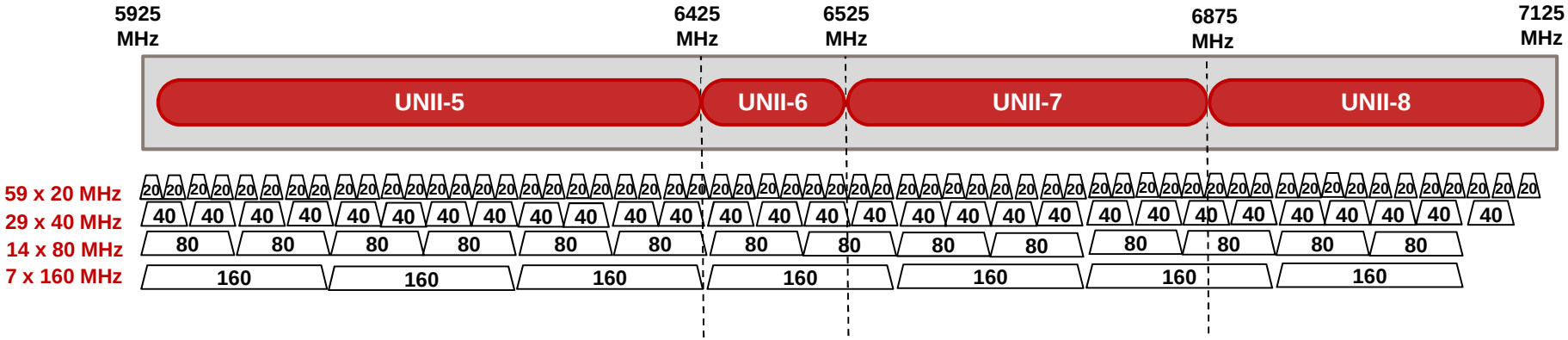

*Source: Quotient Associates, 2017*

# Spectrum Shortfall Undermines Wi-Fi's Future Viability

- Additional mid-band spectrum needs for Wi-Fi have been widely recognized for years --
  - **P.L. 112-96, §6406**: expand UNII spectrum in 5350-5470 MHz and 5850-5925 MHz
    - U-NII-2B (5350-5470 MHz): No
    - U-NII-4 (5850-5925 MHz): waiting



# FCC's NPRM: Unlicensed Use of the 6 GHz Band




- FCC's 6 GHz Unlicensed proceeding is the right action at the right time
  - Addresses Wi-Fi spectrum shortfall
  - Enables Wi-Fi to support gigabit data rates, broadband connectivity goals
  - Supports next generation Wi-Fi
  - Sufficient bandwidth to implement multiple and wider channels (*e.g.* 80/160 MHz)
  - Existing 5 GHz radios could be readily extended to cover the 6 GHz range
  - Good potential for global harmonization -- already allocated to mobile service worldwide
  - Unlicensed devices operating on noninterference basis (Part 15) must and will ensure full protection of incumbent licensed operations

# Low-Power Indoor-Only Transmissions in U-NII 5 and U-NII 7 ***Do Not*** Require AFC

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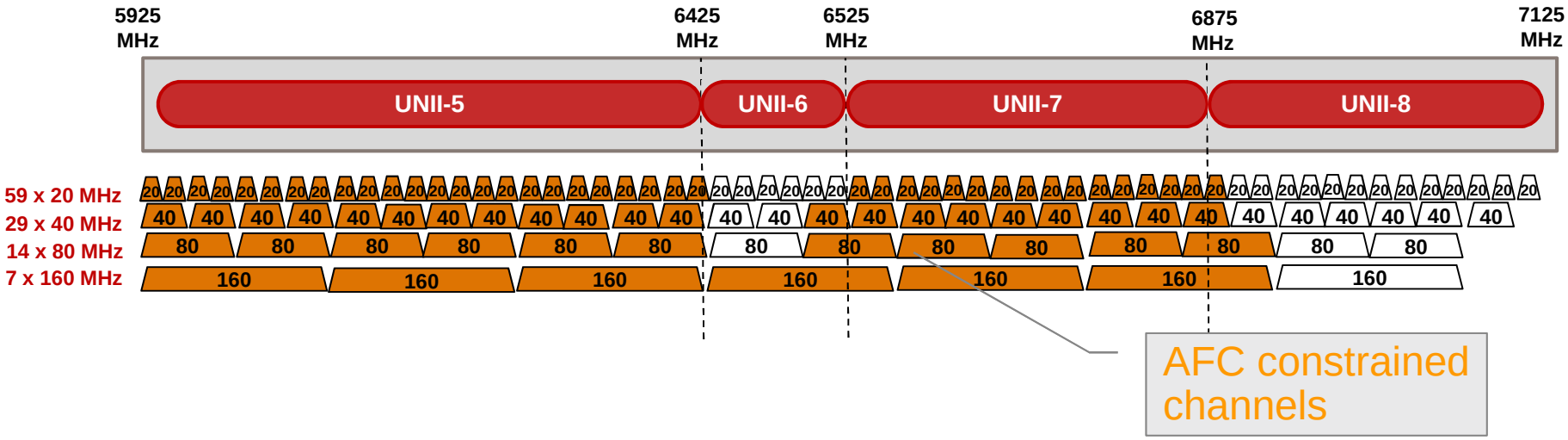
# FCC's 6 GHz NPRM: Low-Power Indoor-Only




- NPRM proposal fragments accessible spectrum/negates potential benefits:
  - UNII-5: Standard/Low-Power Indoor with Automatic Frequency Coordination (AFC)
  - UNII-6: Low-Power Indoor without AFC
  - UNII-7: Standard/Low-Power Indoor with Automatic Frequency Coordination (AFC)
  - UNII-8: Low-Power Indoor without AFC

# FCC's 6 GHz NPRM: Low-Power Indoor-Only

- Low-power indoor transmissions attenuated by:
  - Building entry loss
  - Clutter loss
  - Polarization mismatch loss
- Interference potential is further mitigated by:
  - Multipath fading
  - Low Wi-Fi duty cycle (<1%)
  - Limited frequency overlap/low power spectral density
  - Low probability of UNII deployment in fixed service link path
- Mandating AFC on low-power indoor on U-NII 5 and U-NII 7
  - No access to spectrum until AFC certified and commercially available (*e.g.* possibly for years)
  - Significant burden, cost and complexity
  - Contrary to the public interest

# No Need For “AFC Gatekeeper”

Proprietary | © Wi-Fi Alliance

# No need for “AFC Gatekeeper”

- FCC is the ultimate trusted source
- FCC’s Universal Licensing System (ULS) provides necessary information, management and centralization
- Rigorous FCC certification regime for AFC will ensure functionality to protect incumbent operations – if AFC functionality cannot be certified, it cannot be deployed – full protection for incumbent services
- Regulatory mandate for a multi-stakeholder “AFC management group” is unnecessary management layer -- would impede innovation and disincentivize stakeholder collaboration
- FCC-governed, technology-neutral AFC approach is the best way to promote new opportunities for unlicensed use in 5925-7125 MHz while ensuring protection of incumbent operations